

1 CLAIM:

1. In the method for preparing a nanocomposite by the steps of intercalating a smectite clay with a quaternary ammonium ion, and exfoliating the intercalated clay into a polymer matrix; the improvement enabling augmented exfoliation, comprising: edge treating the smectite clay with negatively charged organic molecules prior to said exfoliation.
2. A method in accordance with claim 1, wherein said molecules comprise a high charge density anionic polymer.
3. A method in accordance with claim 2, wherein said polymer is a polyacrylate.
4. A method in accordance with claim 3, wherein said polyacrylate is added to said clay at 0.1 to 1.0% by weight of the dry clay.
5. A method in accordance with claim 4, wherein said smectite clay is a montmorillonite, which is intercalated with said quaternary ammonium ion by being treated as an aqueous slurry with said ion.
6. A method in accordance with claim 5, wherein said edge treating is carried out prior to treatment of the clay with said quaternary ammonium ion, whereby the quaternary ammonium ion complexes with both the clay edges and the clay basal surfaces.
7. A method in accordance with claim 6, wherein said aqueous slurry of montmorillonite is treated with said polyacrylate and then subjected to high shear, prior to being treated with said quaternary ammonium ion.
8. A method in accordance with claim 7, wherein said high shear step is carried out by passing the aqueous slurry of montmorillonite through a Manton-Gaulin mill.

9. A method in accordance with claim 6, wherein the source of said intercalating ion is a branched chain quaternary ammonium compound.

Add A2

11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100